

CLAIMS

What is claimed is:

- 5     1.     A body fluid cartridge exchange platform device, comprising:  
             a hollow tubular platform housing having a first end with a first opening  
             and a second end with a second opening, wherein said first opening and said  
             second opening facilitate insertion of a tubular cartridge insert that sealably  
             engages inside the platform housing, and said first opening and said second  
10           opening facilitating bi-directional installation and bi-directional removal of said  
             tubular cartridge insert.
2.     The device of claim 1, further comprising a small diameter first hollow leg  
             member having an internal diameter, the leg member suitable for extending from the  
15           platform housing through skin of a patient for facilitating body fluid communication  
             between an organ and at least a portion of the platform housing and tubular cartridge  
             insert.
3.     The device of claim 2, wherein the first hollow leg member supports the platform  
20           housing removed from the skin of the patient.
4.     The device of claim 2, wherein the tubular cartridge insert provides a  
             substantially arcuate flow path through the platform housing.
- 25     5.     The device of claim 2 further comprising a second hollow leg member extending  
             from the platform housing and penetrating through the skin of the patient and  
             completing a fluid communication flow path extending between the first hollow leg  
             member and the second hollow leg member through the tubular cartridge insert.
- 30     6.     The device of claim 5, wherein the first and second hollow leg members include  
             multiple internal lumens that communicate with the platform housing.

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7. The device of claim 6, wherein the multiple internal lumens communicate with multiple organs.

8. The device of claim 7, further comprising an external communicating  
5 passageway coupled to one of the openings of the platform housing for providing communication between the organ and an external destination.

9. The device of claim 8, wherein the external destination provides a mechanism of drug delivery to supply one or more drugs to the organ.

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10. The device of claim 5, wherein the first and second hollow leg members have a diameter of less than about 10 mm.

11. The device of claim 5, wherein the first and second hollow leg members each  
15 further comprise a microporous cell penetrable cuff disposed at a sub-dermal end of the first and second hollow leg members when implanted in a patient.

12. The device of claim 5, further comprising a bioactive coating disposed on at least a portion of the flow path between the first hollow leg member and the second hollow  
20 leg member through the tubular cartridge insert.

13. The device of claim 2, wherein the tubular cartridge insert provides a flow path through the platform housing and wherein the flow path has a diameter varying from a diameter relatively greater than an internal diameter of the first hollow leg member to  
25 substantially a same diameter as the internal diameter of the first hollow leg member.

14. The device of claim 2, wherein multiple tubular cartridge inserts are sealably engaged within the platform housing in alignment and communicate with the leg member.

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15. The device of claim 1, wherein the tubular cartridge insert includes a locking mechanism for locking the tubular cartridge insert into a desired alignment within the platform housing.

5 16. The device of claim 15, wherein the locking mechanism is a flexible tab that extends from the tubular cartridge insert.

17. The device of claim 16, wherein the platform housing includes a receiver for receiving the flexible tab to hold the tubular cartridge insert in a desired alignment.

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18. The device of claim 1, further comprising at least one marking disposed on at least one of the tubular cartridge insert and the platform housing that is suitable as an insertion direction indicator for the tubular cartridge insert.

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19. An access device for providing access to internal organs, comprising:

a housing having a first opening at a first end and a second opening at a second end; and

a cartridge suitable for sealingly engaging an interior of the housing, the cartridge being insertable and removable through the first and second openings.

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20. The device according to claim 19, further comprising a first port and a second port disposed through a wall of the housing.

21. The device according to claim 20, further comprising a first leg having at least a first passage in communication with the first port and a second leg having at least a second passage in communication with the second port.

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22. The device according to claim 21, wherein the first leg extends in a staggered and divergent manner from the second extending leg along the wall of the housing.

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23. The device according to claim 21, further comprising a channel disposed within the cartridge.

24. The device according to claim 23, wherein the channel completes a flow path between the first passage and the second passage through the first and second ports.
- 5 25. The device according to claim 24, further comprising at least one external passage in communication with the channel of the cartridge, the external passage being suitable for at least one of introducing and removing a substance.
26. The device according to claim 24, further comprising a first channel port and a  
10 second channel port at opposite ends of the channel within the cartridge.
27. The device according to claim 26, wherein a distance between the first channel port and a first end of the cartridge is greater than a diameter of the first channel port.
- 15 28. The device according to claim 27, wherein a distance between the second channel port and a second end of the cartridge is greater than a diameter of the second channel port.
29. The device according to claim 24, further comprising a bioactive coating  
20 disposed on at least a portion of the flow path.
30. The device according to claim 21, wherein the first and second legs penetrate skin of a patient.
- 25 31. The device according to claim 21, wherein the first and second legs support the housing distally from a surface of skin of a patient.
32. The device according to claim 21, wherein the first and second legs are minimally invasive when implanted in a patient.
- 30 33. The device according to claim 21, wherein the first and second legs each have an outer diameter of less than about 10 mm.

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34. The device according to claim 21, wherein the first and second legs further comprise a microporous cell penetrable cuff for sub-dermally anchoring the first and second legs below a skin surface of a patient.

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35. The device according to claim 21, wherein the first passage of the first leg and the second passage of the second leg are in fluid communication with the organs.

36. The device according to claim 19, wherein the housing is generally tubular.

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37. The device according to claim 19, wherein the housing comprises a generally oval cross-section.

38. The device according to claim 19, further comprising a locking mechanism suitable for fastening the cartridge in place within the housing.

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39. The device according to claim 19, wherein the cartridge is suitable for connection with an external drug source for supplying at least one drug to the internal organs.

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40. The device of claim 19, further comprising at least one marking disposed on at least one of the cartridge and the housing that is suitable as an insertion direction indicator for the cartridge.

25 41. An access device for providing access to internal organs, comprising:  
a housing having a first opening at a first end; and  
a cartridge suitable for sealingly engaging an interior of the housing, the cartridge being insertable and removable through the first opening.

30 42. The device according to claim 41, further comprising a second opening at a second end.

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43. The device according to claim 42, wherein the cartridge is insertable and removable through the first and second openings.

44. The device according to claim 41, further comprising a first leg having at least a first passage in communication with a first port and a second leg having at least a second passage in communication with a second port.

45. The device according to claim 44, wherein the first leg and the second leg each extend from the wall of the housing.

46. The device according to claim 44, wherein a channel disposed within the cartridge completes a flow path between the first passage and the second passage through the first and second ports.

47. The device of claim 46, further comprising a bioactive coating disposed on at least a portion of the flow path.

48. The device according to claim 46, further comprising at least one external passage in communication with the channel of the cartridge, the external passage being suitable for at least one of introducing and removing a substance.

49. The device according to claim 44, further comprising a first channel port and a second channel port at opposite ends of the channel within the cartridge.

50. The device according to claim 49, wherein a distance between the first channel port and a first end of the cartridge is greater than a diameter of the first channel port and a distance between the second channel port and a second end of the cartridge is greater than a diameter of the second channel port.

51. The device according to claim 44, wherein the first and second legs penetrate the skin of a patient.

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52. The device according to claim 51, wherein the first and second legs further comprise a microporous cell penetrable cuff disposed at a sub-dermal end of the first and second legs when implanted in the patient.

5 53. The device according to claim 44, wherein the first and second legs maintain a minimally invasive diameter of less than about 10 mm.

54. The device according to claim 41, wherein the cartridge is suitable for delivery of at least one drug to the internal organs.

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55. The device of claim 41, further comprising at least one marking disposed on at least one of the cartridge and the housing that is suitable as an insertion direction indicator for the cartridge.

15 56. A body fluid cartridge exchange platform device, comprising:

a hollow tubular platform housing having a first end with a first opening and a second end with a second opening, wherein said first opening and said second opening facilitate insertion of a tubular cartridge insert that sealably engages inside the platform housing, and said first opening and said second opening facilitating bi-directional

20 installation and bi-directional removal of said tubular cartridge insert; and

a cartridge insert tool for executing a bi-directional cartridge insert installation and removal.

25 57. The device of claim 56, wherein the cartridge exchange tool further comprises at least one marking disposed on at least the cartridge exchange tool and the housing that is suitable as an insertion direction indicator for the tubular cartridge insert.

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